

STUDY FRAMEWORK

HETCH HETCHY VALLEY RESTORATION

JULY 2005

STATE OF CALIFORNIA
 **resources**
AGENCY



Section 1: INTRODUCTION

In fall 2004, Governor Schwarzenegger directed the Resources Agency to review and summarize the growing body of studies and analyses prepared over the last 20 years regarding the restoration of the Hetch Hetchy Valley on the upper Tuolumne River in Yosemite National Park. The Department of Water Resources and Department of Parks and Recreation are preparing the summary, using existing budget and staff.

As part of this effort, the State is facilitating an informed public dialogue with stakeholders and other interested parties. A public workshop will be held on July 14, 2005 in Sacramento. This event will provide a forum to discuss the current status of the study and to exchange ideas, information and recommendations. In preparation for the workshop, this framework document explains the objectives and outlines the expectations for the Hetch Hetchy study.

1.1 Background

Hetch Hetchy supplies an average of 220 million gallons per day of exceptionally high-quality water to more than 2.4 million people in the San Francisco Bay Area and generates an annual average of 1.7 billion kilowatt-hours of hydroelectricity. In December 1913, amid much controversy, Congress passed the Raker Act, which granted the City of San Francisco rights to build the Hetch Hetchy system. Construction began in 1914 and O'Shaughnessy Dam was completed in 1923. In 1987, Secretary of the Interior Donald Hodel proposed restoration of Hetch Hetchy Valley and directed the US Bureau of Reclamation to prepare a reconnaissance-level review on behalf of the National Park Service. The US Department of Energy, Assembly Office of Research, and the Department of Water Resources also commented on the subject at that time.

Recent studies by Environmental Defense and UC Davis have renewed public and legislative interest in restoring Hetch Hetchy Valley.

1.2 Overview of the State's Study

The State will review existing Hetch Hetchy restoration reports, and conduct a limited analysis of the key resource management issues. The study will also include limited benefit and cost estimates. No new analytical studies will be performed as part of this evaluation. Specifically, the study will provide:

- A clearinghouse of relevant information regarding Hetch Hetchy Valley restoration and water and power replacement;
- Existing information on key topics and subjects that influence cost and other uncertainties;
- Identification of missing information needed for a more comprehensive reconnaissance or feasibility level study;
- An evaluation of previous studies and reports for level of completeness against customary practices;
- A description of different Hetch Hetchy Valley restoration and recreational opportunities that may be possible, with and without a reservoir;

- A discussion of statewide considerations for water and power replacement alternatives and how they relate to other water and power management needs in the State;
- Estimates of costs and benefits from existing work including Hetch Hetchy Valley restoration and recreation, removing O'Shaughnessy Dam and replacing the water and power benefits; and
- Alternative management frameworks for directing any additional studies necessary to a future decision on Hetch Hetchy Valley restoration.

1.3 Why State Involvement?

Consistent with its mission to manage the State's natural resources, the California Resources Agency is reviewing existing studies on the restoration of Hetch Hetchy Valley. Although Hetch Hetchy is not a State-owned or operated facility, changes to the system would have impacts on California's natural resource management activities and responsibilities, including water and energy supplies, ecosystem restoration, water quality, and recreational and economic considerations. By reviewing the range of conclusions and considerations in 20 years of existing studies, and evaluating the likely costs of the project, the State can provide additional information to support public policy discussions surrounding the future of Hetch Hetchy.

1.4 Study Goal

The study's goal is to provide an objective evaluation of pertinent water supply, water quality, flood management, recreation, environmental, economic, and energy issues. The review will include evaluation of the options for (and likely cost scale associated with) replacing water and energy supplies, increased water treatment, removal of O'Shaughnessy Dam, and ecosystem restoration of Hetch Hetchy Valley. Affected geographic areas covered in the study include Hetch Hetchy Valley, the SFPUC service area, the Modesto Irrigation District (MID) and Turlock Irrigation District (TID) service areas, and the lower San Joaquin River and Delta region. Statewide considerations will also be discussed. In addition, the project report will also identify the necessary next steps for a comprehensive study, including the development of formal objectives, environmental analyses, stakeholder processes, public agency roles, and funding options. During the course of the study, the State will work closely with and obtain input from SFPUC and its retailers, MID, TID, American Indian tribes, the National Park Service, affected stakeholders downstream of Hetch Hetchy, and environmental interest groups. The general public will also have an opportunity to provide input to the project by mail, on a dedicated web site, and at the July 14 workshop.

1.5 Questions

The State review and analysis will provide some context for the Hetch Hetchy debate and perspective on the work completed to date, but will not answer all the questions surrounding the Hetch Hetchy restoration proposal. Examples of questions likely to be answered include:

- Are the assumptions and technical evaluations performed in previous studies sound and/or reasonable?
- What are the cost and environmental impact considerations in replacing the water and power benefits from O'Shaughnessy Dam?

- What information is available regarding dam removal, restoration, and cost?
- What could be the Hetch Hetchy Valley restoration and recreational opportunities and benefits?
- What are the statewide considerations regarding replacing water and power benefits and how would such replacement relate to other water management needs in the State?
- What are some alternative management frameworks for directing any additional studies necessary to reach a future Hetch Hetchy Valley restoration decision?

More technical review, analysis and dialogue must occur among elected officials, federal, State and local agencies, interest groups and the public before some bigger questions can be answered. The aforementioned interests will need to answer questions such as:

- What specific processes and studies are needed to determine the feasibility of restoring Hetch Hetchy Valley and replacing its current water and power benefits?
- Are the water and power replacement options acceptable to the public?
- What aspects of the alternatives will ensure overall success of Hetch Hetchy restoration, as well as water and power replacements?
- Is any one restoration, recreation, or water and power replacement alternative clearly superior?
- Can we devise an assurance package that guarantees that a program will be implemented and/or operated as agreed?
- Who will pay for a comprehensive Hetch Hetchy solution?

1.6 Interviews

DWR and DPR began the review by studying existing reports and meeting with key stakeholders and agencies. The objectives were twofold: 1) learn enough about the issues to appreciate the scope and complexity of the subjects, and 2) develop a study approach that captures a broad perspective. Interviews provided important insights into stakeholder and agency concerns, including discovery that some distrust exists among the various entities. This finding highlights the importance of a process that has high-level political support, credible leadership, and a flexible management framework that collectively produces an objective result.

1.7 Study Status

The Hetch Hetchy investigation is expected to take eight to ten months, with completion in fall 2005. The process began with a review of existing reports and dialogue with key stakeholders and agencies. Information on study scope, schedule, and relevant resource plans is available to the public online at (<http://hetchhetchy.water.ca.gov>).

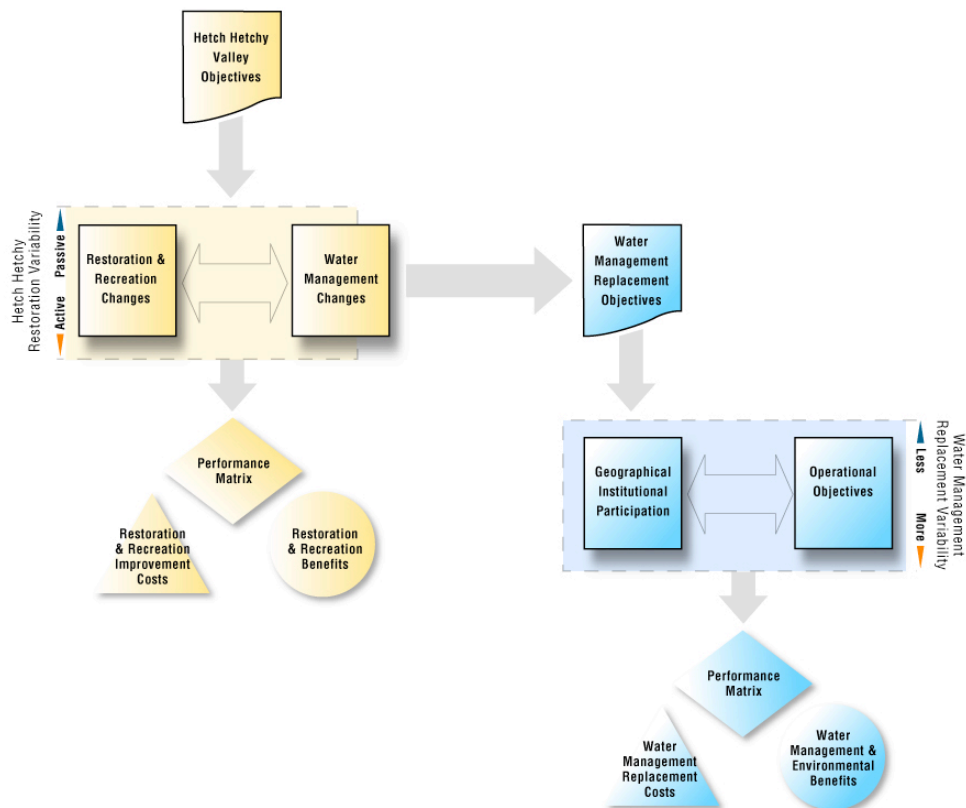
A public workshop is scheduled for July 14, 2005 at the Cal/EPA Building in Sacramento and will provide an opportunity for the public and interested agencies to hear about the review team's activities and offer comments. Through the use of facilitators and display stations supported by different subject area experts, the State will collect comments regarding the evaluation framework and our initial observations.

Section 2: APPROACH

The Hetch Hetchy Restoration Study will step through the evaluation process utilizing existing work and relevant resource management plans by federal, State, and local agencies. It will identify the benefits and costs of restoring Hetch Hetchy Valley and look at difficulties created by restoring the Valley and the resulting need to replace water and power supplies. The end result is expected to be some “ballpark” benefit and cost information along with a “level of confidence” rating regarding information prepared to date.

From the start of this study, it has been recognized that water and energy replacement strategies would need an integrated evaluation. The process would require public and agency involvement along with extensive technical work including: environmental assessments; water management modeling; economic modeling; facility planning; and cost estimating.

No matter how detailed the evaluations for a Hetch Hetchy study, the evaluation steps are essentially the same. Restoration and recreation alternatives are linked to replacement water and power strategies, which will require an iterative process of setting planning assumptions, creating alternative strategies, and predicting their comparative performance against established measures. Concerns about adverse regional and third-party impacts that might result from options involving water and power changes must be considered. This process is illustrated in Figure 2-1.



The study team recognizes that all applicable laws, policies, resource plans, and regulations must be considered before changes are proposed. For example, the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) require that an environmental review document be prepared for all major projects or actions with significant environmental impacts. Issues also exist regarding endangered species, water rights, and the federal Raker Act, which granted the City and County of San Francisco rights-of-way within Yosemite National Park and across the state to construct the Hetch Hetchy water system.

2.1 Hetch Hetchy Valley Objectives

The first steps in the evaluation process should involve determining the purpose and need for the project, then developing objectives and establishing performance measures for restoration and recreation in Hetch Hetchy Valley. Once objectives are established, the evaluation process can be designed to predict how well alternative strategies may accomplish the essential purposes.

A definitive list of all objectives and performance criteria cannot be realized without the full participation of agencies and stakeholders concerned with restoration and recreation in Hetch Hetchy Valley. Moreover, public and agency involvement through outreach and education is always preferable in the initial stages of a process to help shape an assessment, as well as to develop alternatives. Participants representing rural, agricultural, municipal, and industrial water users; wilderness and fishing interests; environmental organizations; businesses; and the general public can help define problems and evaluate alternatives in any Hetch Hetchy restoration proposal. This process needed in any future studies can also help develop broad objectives and establish performance criteria.

2.2 Restoration and Recreation Alternatives

In the current absence of a process to define objectives, the State plans to reflect a broad spectrum of options available for the restoration and recreation opportunities in Hetch Hetchy Valley. While the public debate is focused on a particular subset of these possibilities (i.e. removal of O'Shaughnessy Dam and restoration of Valley flora and fauna) the entire spectrum must be understood in order to appreciate the trade-offs that are involved.

Therefore, the first step will be to present the range of recreation alternatives, from expansion of existing facilities to a wide range of active to passive recreational opportunities following removal of O'Shaughnessy Dam. Likewise, Valley restoration could be accomplished by a variety of active to passive management styles. Since dam removal creates a more complicated alternative (because of water and power supply replacement), the study will concentrate on this particular option while avoiding the exclusion of other possibilities. In all, the study identifies four broad alternative categories: 1) a reservoir with passive recreation (i.e. existing conditions); 2) a reservoir with active recreation; 3) dam removal with passive recreation; and 4) dam removal with active recreation.

2.3 Water and Power Replacement Requirements

Once objectives and requirements for the restoration of Hetch Hetchy Valley are established, requirements for water and power replacements can then be evaluated. They would include reliability, water quality, and economic and institutional criteria. For example, water supply reliability must consider water rights and agreements, as well as reservoirs, pipelines, treatment plants, and other infrastructure necessary to store, treat, and deliver a supply of water of a quantity and quality that is as reliable as the present system and meets future demand in the Bay Area.

Also, before a water and power replacement evaluation can begin, ground rules in the form of planning assumptions are needed. Planning assumptions established for the evaluation set the context within which alternatives are expected to perform. They reflect the external conditions and constraints imposed on any analysis. Some examples of necessary planning assumptions are:

- Hydrology
- Water Use Demand
- Delta and Instream Standards

Adjusting the planning assumptions and repeating the analysis also allow for an assessment of the sensitivity of each alternative's performance to changing circumstances, such as extreme hydrologic changes and/or water use demands.

Again, in an absence of any process to define specific replacement objectives or planning assumptions, the State plans to reflect the broadest possible water and power replacement options available for a Hetch Hetchy Valley restoration project. Many options likely to be identified as part of a water and power replacement plan will represent a small increment of change in water and power when viewed on a statewide basis, but still could have considerable effects in the Tuolumne River basin, on Delta transport constraints, water quality standards, endangered species, and competition in the California water market. The Hetch Hetchy study will discuss each individual water management component for variability due to geographic institutional participation and operational objectives that can affect its contribution to a potential alternative strategy. Water and power alternative strategies will also be evaluated for their impact on geographic areas including the Valley itself, the SFPUC's Hetch Hetchy system, the lower Tuolumne (including the Districts), and the lower San Joaquin (including the Bay/Delta and statewide.)

If possible, some attempt will be made to display water management characteristics among the different options and water management scenarios. These characteristics include subjects covering water supply, energy, water quality and treatment, recreation, restoration, flood control, and institutional issues. In addition to identifying some characteristics of the different proposals, an overall discussion will be prepared regarding the "level of confidence" associated with the cost and uncertainties of the various scenarios. This includes rating the existing alternatives and scenarios on completeness of work to date, public process and stakeholder involvement, applied methodology, institutional cooperation, water rights consequences, third-party effects, regulatory compliance, and legislation.

2.4 Economics and Costs

An appraisal-level evaluation will be applied to the options available through existing reports and model studies to determine order-of-magnitude benefits and costs. Benefits and costs for the spectrum of recreation and restoration alternatives will be identified and alternatives requiring replacement of water and power supplies will be included in the potential project costs.

Section 3: LISTING OF STUDIES BEING REVIEWED

Alternatives For Restoration Of Hetch Hetchy Valley Following Removal Of The Dam And Reservoir - National Park Service (1988)

Hetch Hetchy: Striking a Balance - U.S. Department of Energy (1988)

Hetch Hetchy: Water and Power Replacement Concepts: Report U.S. Bureau of Reclamation (1988)

Hetch Hetchy Reservoir Study - Department of Water Resources (1990)

Paradise Regained: Solutions for Restoring Yosemite's Hetch Hetchy Valley - Environmental Defense (2004)

Re-Assembling Hetch Hetchy: Water Supply Implications of Removing O'Shaughnessy Dam - Sarah Null and Jay Lund, UC Davis (2004)

Restoring Hetch Hetchy - Assembly Office of Research (1988)

Section 4: CONCLUSION

The final Hetch Hetchy Study will include the following additional sections:

Relevant Resource Management Plans
Restoration and Recreation Components
Water and Power Replacement Components
Water Management Modeling (Integrating Components)
Economics and Costs
Next Steps